

## SEQUENCE LISTING

<110> KIRIN BEER KABUSIKI .KAISHA

<120> A mutant of anti CD40 antibody

<130> PH-2356-PCT

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<150> JP 2003-431408

<151> 2003-12-25

<160> 142

<170> PatentIn Ver. 2.1

<210> 1

<211> 175

<212> PRT

<213> Homo sapiens

<400> 1

Glu Pro Pro Thr Ala Cys Arg Glu Lys Gln Tyr Leu Ile Asn Ser Gln

1

5

10

15

Cys Cys Ser Leu Cys Gln Pro Gly Gln Lys Leu Val Ser Asp Cys Thr

20

25

30

Glu Phe Thr Glu Thr Glu Cys Leu Pro Cys Gly Glu Ser Glu Phe Leu  
35 40 45

Asp Thr Trp Asn Arg Glu Thr His Cys His Gln His Lys Tyr Cys Asp  
50 55 60

Pro Asn Leu Gly Leu Arg Val Gln Gln Lys Gly Thr Ser Glu Thr Asp  
65 70 75 80

Thr Ile Cys Thr Cys Glu Glu Gly Trp His Cys Thr Ser Glu Ala Cys  
85 90 95

Glu Ser Cys Val Leu His Arg Ser Cys Ser Pro Gly Phe Gly Val Lys  
100 105 110

Gln Ile Ala Thr Gly Val Ser Asp Thr Ile Cys Glu Pro Cys Pro Val  
115 120 125

Gly Phe Phe Ser Asn Val Ser Ser Ala Phe Glu Lys Cys His Pro Trp  
130 135 140

Thr Ser Cys Glu Thr Lys Asp Leu Val Val Gln Gln Ala Gly Thr Asn  
145 150 155 160

Lys Thr Asp Val Val Cys Gly Pro Gln Asp Arg Leu Arg Ala Leu  
165 170 175

<210> 2

<211> 39

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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atatgctagc accaagggcc catcggtctt cccctggc

39

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<212> DNA

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<223> Description of Artificial Sequence:Synthetic DNA

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atatgatcc tcatttaccg ggagacaggg agaggctc

38

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<223> Description of Artificial Sequence:Synthetic DNA

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40

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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gttttctcga tggaggctgg gaggcc

26

<210> 6

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<223> Description of Artificial Sequence:Synthetic DNA

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38

<210> 7

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<223> Description of Artificial Sequence:Synthetic DNA

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ggcctcccag cctccatcga gaaaac

26

<210> 8

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 8

atatggatcc tcatttaccc ggagacaggg agaggc

36

<210> 9

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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aggggtccgg gagatcatga gagtgcctt

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<210> 10

<211> 30

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 10

aaggacactc tcatgatctc ccggaccctt

30

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<211> 23

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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tgatcatacg tagatatcac ggc

23

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<223> Description of Artificial Sequence:Synthetic DNA

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23

<210> 13

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<223> Description of Artificial Sequence:Synthetic DNA

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<210> 14

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<223> Description of Artificial Sequence:Synthetic DNA

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<211> 23

<212> DNA

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<223> Description of Artificial Sequence:Synthetic DNA

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<210> 16

<211> 36

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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36

<210> 17

<211> 27



<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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gggtacgtcc tcacattcag tgatcag

27

<210> 18

<211> 31

<212> DNA

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<223> Description of Artificial Sequence:Synthetic DNA

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31

<210> 19

<211> 31

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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ctgcaacgta gatcacaagc ccagcaacac c

31

<210> 20

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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tgatcatacg tagatatcac ggc

23

<210> 21

<211> 27

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<223> Description of Artificial Sequence:Synthetic DNA

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27

<210> 22

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic DNA

<400> 22

gggtgttgctg ggcttgtgat ctacgttgca g

31

<210> 23

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic DNA

<400> 23

ctgcaacgta gatcacaagc ccagcaacac c

31

<210> 24

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 24

tgatcatacg tagatatcac ggc

23

<210> 25

<211> 27

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic DNA

<400> 25

gggtacgtcc tcacattcag tgatcag

27

<210> 26

<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic DNA

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32

<210> 27

<211> 32

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 27

ggtggacaag agagttgagt ccaaattgtg tg

32

<210> 28

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 28

tgatcatacg tagatatcac ggc

23

<210> 29

<211> 27

<212> DNA

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<223> Description of Artificial Sequence:Synthetic DNA

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27

<210> 30

<211> 34

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 30

ggcacggtgg gcatggggga ccatatttgc gctc

34

<210> 31

<211> 34

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 31

gagcgcaaat atggtccccc atgccaccg tgcc

34

<210> 32

<211> 23

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 32

tgatcatacg tagatatcac ggc

23

<210> 33

<211> 27

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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gggtacgtcc tcacattcag tgatcag

27

<210> 34

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<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

<400> 34

gaagactgac ggtcccccca ggaactctgg tgctgggca

39

<210> 35

<211> 39

<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic DNA

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tgcccagcac cagagttcct ggggggaccg tcagtcttc

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<210> 36

<211> 23

<212> DNA

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<400> 36

tgatcatacg tagatatcac ggc

23

<210> 37

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<212> DNA

<213> Homo sapiens

<400> 37

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gcagcagtca ggtccaggac tgggaagcc ctgcagacc ctctactca cctgtgcat 180
ctccggggac agtgtctcta gcaacagtgc tacttggaa tggatcaggc agtccccatc 240
gagagacctt gagggtgga gaaggacata ctacagggtc aagggtatc gtgattatgt 300
aggatctgtg aaaagtcaa taatcatcaa ccagacaca tccaacaacc agttctccct 360
gcagctgaac tctgtgactc ccgaggacac ggctatatat tactgtaca gagcacagt 420
gctgggaggg gattaccct actactacag tatggacgtc tggggccaag ggaccacgt 480
caccgtctct tcagctcca ccaaggggcc atcgggtctt cccctggcg cctgtccag 540
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ggtgacggtg tcgtggaact caggcgtctt gaccagcggc gtgcacacct tccagctgt 660
cctacagtcc tcaggactct actccctcag cagcgtggtg accgtgccct ccagcaactt 720
cggcaccag acctacacct gcaacgtaga tcacaagccc agcaacacca aggtggacaa 780
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gctggactca gacggtcct tcttctcta cagcaagctc accgtggaca agagcaggtg 1380
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gcagaagagc ctctccctgt ctccgggtaa atgaggatcc 1480
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<210> 38

<211> 474

<212> PRT

<213> Homo sapiens

<400> 38

Met Ser Val Ser Phe Leu Ile Phe Leu Pro Val Leu Gly Leu Pro Trp

1 5 10 15

Gly Val Leu Ser Gln Val Gln Leu Gln Gln Ser Gly Pro Gly Leu Val

20 25 30

Lys Pro Ser Gln Thr Leu Ser Leu Thr Cys Ala Ile Ser Gly Asp Ser

35 40 45

Val Ser Ser Asn Ser Ala Thr Trp Asn Trp Ile Arg Gln Ser Pro Ser

50 55 60

Arg Asp Leu Glu Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr

65 70 75 80

Arg Asp Tyr Val Gly Ser Val Lys Ser Arg Ile Ile Ile Asn Pro Asp

85 90 95

Thr Ser Asn Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu

100 105 110

Asp Thr Ala Ile Tyr Tyr Cys Thr Arg Ala Gln Trp Leu Gly Gly Asp

115 120 125

Tyr Pro Tyr Tyr Tyr Ser Met Asp Val Trp Gly Gln Gly Thr Thr Val  
130 135 140

Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala  
145 150 155 160

Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu  
165 170 175

Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly  
180 185 190

Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser  
195 200 205

Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe  
210 215 220

Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr  
225 230 235 240

Lys Val Asp Lys Thr Val Glu Arg Lys Cys Cys Val Glu Cys Pro Pro  
245 250 255

Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro  
260 265 270

Lys Pro Lys Asp Thr Leu Met Ile Ser Arg Thr Pro Glu Val Thr Cys  
275 280 285

Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp  
290 295 300

Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu  
305 310 315 320

Glu Gln Phe Asn Ser Thr Phe Arg Val Val Ser Val Leu Thr Val Val  
325 330 335

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn  
340 345 350

Lys Gly Leu Pro Ala Pro Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly  
355 360 365

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu  
370 375 380

Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr  
385 390 395 400

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn  
405 410 415

Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe  
420 425 430

Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn  
435 440 445

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr

450

455

460

Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys

465

470

<210> 39

<211> 406

<212> DNA

<213> Homo sapiens

<400> 39

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gtctttgtct ccaggggaaa gagccaccct ctctgcagg gccagtcaga gtgtagcag 180  
ctacttagcc tggtagcaac agaaacctgg ccaggctccc aggctcctca tctatgatgc 240  
atccaacagg gccactggca tcccagccag gttcagtggc agtgggtctg ggacagactt 300  
cactctcacc atcagcagcc tagagcctga agattttgca gtttattact gtcagcagcg 360  
tagcaacact ttcggccctg ggaccaaagt ggatatcaaa cgtacg 406

<210> 40

<211> 126

<212> PRT

<213> Homo sapiens

<400> 40

Met Glu Ala Pro Ala Gln Leu Leu Phe Leu Leu Leu Trp Leu Pro

1	5	10	15
Asp Thr Thr Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser			
20	25	30	
Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser			
35	40	45	
Val Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro			
50	55	60	
Arg Leu Leu Ile Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala			
65	70	75	80
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser			
85	90	95	
Ser Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser			
100	105	110	
Asn Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys Arg Thr			
115	120	125	

<210> 41

<211> 508

<212> DNA

<213> Homo sapiens

<400> 41

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 ggactcacca tggagttggg actgagctgg attttccttt tggctatattt aaaaggtgtc 120  
 cagtgtgaag tgcagctggt ggagtcctgg ggaggtcttg tacagcctgg caggtccctg 180  
 agactctcct gtgcagcctc tggattcacc tttgatgatt atgcatgca ctgggtccgg 240  
 caagctccag ggaagggcct ggagtgggtc tcaggtatta gttggaatag tggtagcttg 300  
 gtgcatgcgg actctgtgaa gggccgattc accatctcca gagacaacgc caagaactcc 360  
 ctgtatctgc aaatgaacag tctgagagct gaggacacgg ccttgtatta ctgtgcaaga 420  
 gataggctat ttcggggagt taggtactac ggtatggacg tctggggcca agggaccacg 480  
 gtcaccgtct cctcagctag caccaagg 508

<210> 42

<211> 146

<212> PRT

<213> Homo sapiens

<400> 42

Met Glu Leu Gly Leu Ser Trp Ile Phe Leu Leu Ala Ile Leu Lys Gly

1 5 10 15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln

20 25 30

Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe

35 40 45

Asp Asp Tyr Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu

50 55 60

Glu Trp Val Ser Gly Ile Ser Trp Asn Ser Gly Ser Leu Val His Ala

65                                      70                                      75                                      80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn

85                                      90                                      95

Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu

100                                      105                                      110

Tyr Tyr Cys Ala Arg Asp Arg Leu Phe Arg Gly Val Arg Tyr Tyr Gly

115                                      120                                      125

Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser

130                                      135                                      140

Thr Lys

145

<210> 43

<211> 414

<212> DNA

<213> Homo sapiens

<400> 43

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ctactctggc tcccagatac caccggagaa attgtgttga cacagtctcc agccaccctg 120  
tctttgtctc caggggaaag agccaccctc tcttgcaggg ccagtcagag tgtttagcagc 180  
tacttagcct ggtaccaaca gaaacctggc caggctccca ggctcctcat ctatgatgca 240  
tccaacaggg ccactggcat ccagccaggg ttcagtggca gtgggtcttg gacagacttc 300  
actctacca tcagcagcct agagcctgaa gattttgcag tttattactg tcagcagcgt 360



agccactggc tcactttcgg cgggggggacc aaggtggaga tcaaacgtac ggtg 414

<210> 44

<211> 129

<212> PRT

<213> Homo sapiens

<400> 44

Met Glu Ala Pro Ala Gln Leu Leu Phe Leu Leu Leu Leu Trp Leu Pro

1 5 10 15

Asp Thr Thr Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser

20 25 30

Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser

35 40 45

Val Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro

50 55 60

Arg Leu Leu Ile Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala

65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser

85 90 95

Ser Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser

100 105 110

His Trp Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr

115

120

125

Val

<210> 45

<211> 462

<212> DNA

<213> Homo sapiens

<400> 45

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ggactactga agccttcgga gaccctgtcc ctcacctgca ctgtctctgg cggctccatc 180
agcagtcctg gttactacgg gggctggatc cgccagcccc cagggaaggg gctggagtgg 240
attgggagta tctataaaag tgggagcacc taccacaacc cgtccctcaa gagtcgagtc 300
accatatccg tagacacgtc caagaaccag ttctccctga agctgagctc tgtgaccgcc 360
gcagacacgg ctgtgtatta ctgtacgaga cctgtagtac gatatttttg gtggttcgac 420
ccctggggcc agggaaccct ggtcacgctc tcctcagcta gc 462
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<210> 46

<211> 149

<212> PRT

<213> Homo sapiens

<400> 46

Met Asp Leu Met Cys Lys Lys Met Lys His Leu Trp Phe Phe Leu Leu

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Leu Val Ala Ala Pro Arg Trp Val Leu Ser Gln Leu Gln Leu Gln Glu			
20	25	30	
Ser Gly Pro Gly Leu Leu Lys Pro Ser Glu Thr Leu Ser Leu Thr Cys			
35	40	45	
Thr Val Ser Gly Gly Ser Ile Ser Ser Pro Gly Tyr Tyr Gly Gly Trp			
50	55	60	
Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly Ser Ile Tyr			
65	70	75	80
Lys Ser Gly Ser Thr Tyr His Asn Pro Ser Leu Lys Ser Arg Val Thr			
85	90	95	
Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser			
100	105	110	
Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Thr Arg Pro Val Val			
115	120	125	
Arg Tyr Phe Gly Trp Phe Asp Pro Trp Gly Gln Gly Thr Leu Val Thr			
130	135	140	
Val Ser Ser Ala Ser			
145			

<210> 47

<211> 448

<212> DNA

<213> Homo sapiens

<400> 47

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atgtgccatc cagttgacct agtctccatc ctccctgtct gcattcttag gagacagagt 180
caccatcact tgccgggcaa gtcagggcat tagcagtgtt ttagcctggt atcagcagaa 240
accagggaaa gtcctaagc tcctgatcta tgatgcctcc aatttgaaa gtgggggtccc 300
atcaagggtc agcggcagtg gatctgggac agatttcact ctcaccatca gcagcctgca 360
gcctgaagat ttgcaactt attactgtca acagtttaat agttaccga cgttcggcca 420
agggaccaag gtggaaatca aacgtacg                                     448
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<210> 48

<211> 130

<212> PRT

<213> Homo sapiens

<400> 48

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Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp
  1              5              10              15

Leu Pro Gly Ala Arg Cys Ala Ile Gln Leu Thr Gln Ser Pro Ser Ser
          20              25              30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser
    35              40              45
```

Gln Gly Ile Ser Ser Ala Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys

50

55

60

Ala Pro Lys Leu Leu Ile Tyr Asp Ala Ser Asn Leu Glu Ser Gly Val

65

70

75

80

Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr

85

90

95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln

100

105

110

Phe Asn Ser Tyr Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys

115

120

125

Arg Thr

130

<210> 49

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic

peptide

<400> 49

Glu Pro Pro Thr Ala Cys Arg Glu Lys Gln Tyr Leu Ile

1

5

10

<210> 50

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic  
peptide

<400> 50

Pro Thr Ala Cys Arg Glu Lys Gln Tyr Leu Ile Asn Ser

1

5

10

<210> 51

<211> 13

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence:Synthetic  
peptide

<400> 51

Ala Cys Arg Glu Lys Gln Tyr Leu Ile Asn Ser Gln Cys

1

5

10

<210> 52

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic  
peptide

<400> 52

Arg Glu Lys Gln Tyr Leu Ile Asn Ser Gln Cys Cys Ser  
1 5 10

<210> 53

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:Synthetic  
peptide

<400> 53

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Thr Glu Cys Leu Pro Cys Gly Glu Ser Glu Phe Leu Asp

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35 40 45

Val Ser Ser Asn Ser Ala Thr Trp Asn Trp Ile Arg Gln Ser Pro Ser

50 55 60

Arg Asp Leu Glu Trp Leu Gly Arg Thr Tyr Tyr Arg Ser Lys Trp Tyr

65 70 75 80

Arg Asp Tyr Val Gly Ser Val Lys Ser Arg Ile Ile Ile Asn Pro Asp

85 90 95

Thr Ser Asn Asn Gln Phe Ser Leu Gln Leu Asn Ser Val Thr Pro Glu

100 105 110

Asp Thr Ala Ile Tyr Tyr Cys Thr Arg Ala Gln Trp Leu Gly Gly Asp

115 120 125

Tyr Pro Tyr Tyr Tyr Ser Met Asp Val Trp Gly Gln Gly Thr Thr Val  
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Pro Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu  
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Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly  
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Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser  
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Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Asn Phe  
210 215 220

Gly Thr Gln Thr Tyr Thr Cys Asn Val Asp His Lys Pro Ser Asn Thr  
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245 250 255

Cys Pro Ala Pro Pro Val Ala Gly Pro Ser Val Phe Leu Phe Pro Pro  
260 265 270

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Val Val Val Asp Val Ser His Glu Asp Pro Glu Val Gln Phe Asn Trp  
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Tyr Val Asp Gly Val Glu Val His Asn Ala Lys Thr Lys Pro Arg Glu  
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325 330 335

His Gln Asp Trp Leu Asn Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn  
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Lys Gly Leu Pro Ala Ser Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly  
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Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu  
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Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr  
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Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn  
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Asn Tyr Lys Thr Thr Pro Pro Met Leu Asp Ser Asp Gly Ser Phe Phe  
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Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser Arg Trp Gln Gln Gly Asn  
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gaagattttg cagtttatta ctgtcagcag cgtagcaaca ctttcggccc tgggaccaa 360  
gtggatatca aacgtacggt ggctgcacca tctgtcttca tcttccgcc atctgatgag 420  
cagttgaaat ctggaactgc ctctgttgtg tgcctgctga ataacttcta tcccagagag 480  
gccaaagtac agtggaaggt ggataacgcc ctccaatcgg gtaactcca ggagagtgtc 540  
acagagcagg acagcaagga cagcacctac agcctcagca gcacctgac gctgagcaaa 600  
gcagactacg agaaacacaa agtctacgcc tgcgaagtca cccatcaggg cctgagctcg 660  
cccgtcacaa agagcttcaa caggggagag tgttga 696

<210> 134

<211> 231

<212> PRT



<213> Homo sapiens

<400> 134

Met Glu Ala Pro Ala Gln Leu Leu Phe Leu Leu Leu Leu Trp Leu Pro

1 5 10 15

Asp Thr Thr Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser

20 25 30

Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser

35 40 45

Val Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro

50 55 60

Arg Leu Leu Ile Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala

65 70 75 80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser

85 90 95

Ser Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser

100 105 110

Asn Thr Phe Gly Pro Gly Thr Lys Val Asp Ile Lys Arg Thr Val Ala

115 120 125

Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser

130 135 140

Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu  
 145 150 155 160

Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser  
 165 170 175

Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu  
 180 185 190

Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val  
 195 200 205

Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys  
 210 215 220

Ser Phe Asn Arg Gly Glu Cys  
 225 230

<210> 135

<211> 1407

<212> DNA

<213> Homo sapiens

<400> 135

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 tgtgcagcct ctggattcac ctttgatgat tatgccatgc actgggtccg gcaagctcca 180  
 gggaagggcc tggagtgggt ctcaggattt agttggaata gtggtagctt ggtgcatgcg 240

gactctgtga agggccgatt caccatctcc agagacaacg ccaagaactc cctgtatctg 300  
caaatgaaca gtctgagagc tgaggacacg gccttgtatt actgtgcaag agataggcta 360  
tttcggggag ttaggtacta cggtatggac gtctggggcc aagggaccac ggtcacctgc 420  
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tccgagagca cagcggccct gggctgcctg gtcaaggact acttccccga accggtgacg 540  
gtgtcgtgga actcaggcgc tctgaccagc ggcgtgcaca cttcccagc tgtcctacag 600  
tcctcaggac tctactccct cagcagcgtg gtgaccgtgc cctccagcaa cttcggcacc 660  
cagacctaca cctgcaacgt agatcacaag cccagcaaca ccaaggtgga caagacagtt 720  
gagcgcaaat gttgtgtcga gtgcccaccg tgcccagcac cacctgtggc aggaccgtca 780  
gtcttctct tcccccaaa acccaaggac accctcatga tctcccggac ccctgaggtc 840  
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gacggcgtgg aggtgcataa tgccaagaca aagccacggg aggagcagtt caacagcacg 960  
ttcgtgtgg tcagcgtcct caccgttgtg caccaggact ggctgaacgg caaggagtac 1020  
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aaagggcagc cccgagaacc acagggtgtac accctgcccc catcccggga ggagatgacc 1140  
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gagtgggaga gcaatgggca gccggagAAC aactacaaga ccacacctcc catgctggac 1260  
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<210> 136

<211> 468

<212> PRT

<213> Homo sapiens

<400> 136

Met Glu Leu Gly Leu Ser Trp Ile Phe Leu Leu Ala Ile Leu Lys Gly

1

5

10

15

Val Gln Cys Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln  
20 25 30

Pro Gly Arg Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe  
35 40 45

Asp Asp Tyr Ala Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu  
50 55 60

Glu Trp Val Ser Gly Ile Ser Trp Asn Ser Gly Ser Leu Val His Ala  
65 70 75 80

Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ala Lys Asn  
85 90 95

Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Leu  
100 105 110

Tyr Tyr Cys Ala Arg Asp Arg Leu Phe Arg Gly Val Arg Tyr Tyr Gly  
115 120 125

Met Asp Val Trp Gly Gln Gly Thr Thr Val Thr Val Ser Ser Ala Ser  
130 135 140

Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro Cys Ser Arg Ser Thr  
145 150 155 160

Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val Lys Asp Tyr Phe Pro  
165 170 175

Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala Leu Thr Ser Gly Val

180

185

190

His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly Leu Tyr Ser Leu Ser

195

200

205

Ser Val Val Thr Val Pro Ser Ser Asn Phe Gly Thr Gln Thr Tyr Thr

210

215

220

Cys Asn Val Asp His Lys Pro Ser Asn Thr Lys Val Asp Lys Thr Val

225

230

235

240

Glu Arg Lys Cys Cys Val Glu Cys Pro Pro Cys Pro Ala Pro Pro Val

245

250

255

Ala Gly Pro Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu

260

265

270

Met Ile Ser Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser

275

280

285

His Glu Asp Pro Glu Val Gln Phe Asn Trp Tyr Val Asp Gly Val Glu

290

295

300

Val His Asn Ala Lys Thr Lys Pro Arg Glu Glu Gln Phe Asn Ser Thr

305

310

315

320

Phe Arg Val Val Ser Val Leu Thr Val Val His Gln Asp Trp Leu Asn

	325	330	335
Gly Lys Glu Tyr Lys Cys Lys Val Ser Asn Lys Gly Leu Pro Ala Ser			
	340	345	350
Ile Glu Lys Thr Ile Ser Lys Thr Lys Gly Gln Pro Arg Glu Pro Gln			
	355	360	365
Val Tyr Thr Leu Pro Pro Ser Arg Glu Glu Met Thr Lys Asn Gln Val			
	370	375	380
Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val			
	385	390	395
			400
Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro			
	405	410	415
Pro Met Leu Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr			
	420	425	430
Val Asp Lys Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val			
	435	440	445
Met His Glu Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu			
	450	455	460
Ser Pro Gly Lys			
	465		

<210> 137

<211> 702

<212> DNA

<213> Homo sapiens

<400> 137

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gaaattgtgt tgacacagtc tccagccacc ctgtctttgt ctccagggga aagagccacc 120
ctctcctgca gggccagtca gagtgtttag agctacttag cctggtacca acagaaacct 180
ggccaggctc ccaggctcct catctatgat gcatccaaca gggccactgg catcccagcc 240
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gaagattttg cagtttatta ctgtcagcag cgtagccact ggctcacttt cggcgggggg 360
accaaggtgg agatcaaacg tacggtggct gcaccatctg tcttcatctt cccgccatct 420
gatgagcagt tgaaatctgg aactgcctct gttgtgtgcc tgctgaataa cttctatccc 480
agagaggcca aagtacagtg gaaggtggat aacgccctcc aatcgggtaa ctcccaggag 540
agtgtcacag agcaggacag caaggacagc acctacagcc tcagcagcac cctgacgctg 600
agcaaagcag actacgagaa acacaaagtc tacgcctgcg aagtcacca tcagggcctg 660
agctcgcccc tcacaaagag cttcaacagg ggagagtgtt ga 702
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<210> 138

<211> 233

<212> PRT

<213> Homo sapiens

<400> 138

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Met Glu Ala Pro Ala Gln Leu Leu Phe Leu Leu Leu Leu Trp Leu Pro
      1              5              10              15
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Asp Thr Thr Gly Glu Ile Val Leu Thr Gln Ser Pro Ala Thr Leu Ser
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20	25	30
Leu Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser		
35	40	45
Val Ser Ser Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro		
50	55	60
Arg Leu Leu Ile Tyr Asp Ala Ser Asn Arg Ala Thr Gly Ile Pro Ala		
65	70	75
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser		
85	90	95
Ser Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Arg Ser		
100	105	110
His Trp Leu Thr Phe Gly Gly Gly Thr Lys Val Glu Ile Lys Arg Thr		
115	120	125
Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu		
130	135	140
Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro		
145	150	155
Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly		
165	170	175
Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr		



180

185

190

Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His

195

200

205

Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val

210

215

220

Thr Lys Ser Phe Asn Arg Gly Glu Cys

225

230

&lt;210&gt; 139

&lt;211&gt; 1425

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 139

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 cccagatggg tcctgtccca gctgcagctg caggagtcgg gcccaggact actgaagcct 120  
 tcggagaccc tgtccctcac ctgcactgtc tctggcggtt ccatcagcag tcctggttac 180  
 tacggggggct ggatccgcca gccccaggga aaggggctgg agtggattgg gagtatctat 240  
 aaaagtggga gcacctacca caaccgtcc ctcaagagtc gaggcaccat atccgtagac 300  
 acgtccaaga accagttctc cctgaagctg agctctgtga ccgccgcaga cacggctgtg 360  
 tattactgta cgagacctgt agtacgatat tttgggtggt tcgacctctg gggccaggga 420  
 accctgggtc ccgtctctc agctagcacc aaggggccat ccgtcttccc cctggcgccc 480  
 tgctccagga gcacctccga gagcacagcc gccctgggct gcctggtcaa ggactacttc 540  
 cccgaaccgg tgacgggtgtc gtggaactca ggccgacctga ccagcggcgt gcacaccttc 600  
 ccggctgtcc tacagtcttc aggactctac tccctcagca gcgtggtgac cgtgcccttc 660  
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gtggacaaga gaggtagtc caaatatggt ccccatgcc caccatgcc agcacctgag 780  
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 aagagcaggt ggcaggaggg gaatgtcttc tcatgctccg tgatgcatga ggctctgcac 1380  
 aaccactaca cacagaagag cctctccctg tctctgggta aatga 1425

<210> 140

<211> 474

<212> PRT

<213> Homo sapiens

<400> 140

Met Asp Leu Met Cys Lys Lys Met Lys His Leu Trp Phe Phe Leu Leu

1 5 10 15

Leu Val Ala Ala Pro Arg Trp Val Leu Ser Gln Leu Gln Leu Gln Glu

20 25 30

Ser Gly Pro Gly Leu Leu Lys Pro Ser Glu Thr Leu Ser Leu Thr Cys

35 40 45

Thr Val Ser Gly Gly Ser Ile Ser Ser Pro Gly Tyr Tyr Gly Gly Trp

50		55		60	
Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile Gly Ser Ile Tyr					
65		70		75	80
Lys Ser Gly Ser Thr Tyr His Asn Pro Ser Leu Lys Ser Arg Val Thr					
	85		90		95
Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu Lys Leu Ser Ser					
	100		105		110
Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Thr Arg Pro Val Val					
	115		120		125
Arg Tyr Phe Gly Trp Phe Asp Pro Trp Gly Gln Gly Thr Leu Val Thr					
	130		135		140
Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe Pro Leu Ala Pro					
145		150		155	160
Cys Ser Arg Ser Thr Ser Glu Ser Thr Ala Ala Leu Gly Cys Leu Val					
	165		170		175
Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp Asn Ser Gly Ala					
	180		185		190
Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu Gln Ser Ser Gly					
	195		200		205
Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser Ser Ser Leu Gly					

220

Lys Gly Leu Pro Ser Ser Ile Glu Lys Thr Ile Ser Lys Ala Lys Gly  
355 360 365

Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu Pro Pro Ser Gln Glu Glu  
 370 375 380

Met Thr Lys Asn Gln Val Ser Leu Thr Cys Leu Val Lys Gly Phe Tyr  
 385 390 395 400

Pro Ser Asp Ile Ala Val Glu Trp Glu Ser Asn Gly Gln Pro Glu Asn  
 405 410 415

Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp Ser Asp Gly Ser Phe Phe  
 420 425 430

Leu Tyr Ser Arg Leu Thr Val Asp Lys Ser Arg Trp Gln Glu Gly Asn  
 435 440 445

Val Phe Ser Cys Ser Val Met His Glu Ala Leu His Asn His Tyr Thr  
 450 455 460

Gln Lys Ser Leu Ser Leu Ser Leu Gly Lys  
 465 470

<210> 141

<211> 708

<212> DNA

<213> Homo sapiens

<400> 141

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gtcaccatca cttgccgggc aagtcagggc attagcagtg ctttagcctg gtatcagcag 180  
 aaaccagggg aagctcctaa gtcctgatac tatgatgcct ccaatttgga aagtgggggc 240  
 ccatcaaggt tcagcggcag tggatctggg acagatttca ctctcacat cagcagcctg 300  
 cagcctgaag attttgcaac ttattactgt caacagtta atagttaccc gacgttcggc 360  
 caagggacca aggtggaaat caaacgtacg gtggctgcac catctgtctt catcttcccg 420  
 ccatctgatg agcagttgaa atctggaact gcctctgttg tgtgcctgct gaataacttc 480  
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 caggagagtg tcacagagca ggacagcaag gacagcacct acagcctcag cagcacccctg 600  
 acgctgagca aagcagacta cgagaaacac aaagtctacg cctgcgaagt caccatcag 660  
 ggctgagct cgcccgtcac aaagagcttc aacaggggag agtgttga 708

<210> 142

<211> 235

<212> PRT

<213> Homo sapiens

<400> 142

Met Asp Met Arg Val Pro Ala Gln Leu Leu Gly Leu Leu Leu Leu Trp

1 5 10 15

Leu Pro Gly Ala Arg Cys Ala Ile Gln Leu Thr Gln Ser Pro Ser Ser

20 25 30

Leu Ser Ala Ser Val Gly Asp Arg Val Thr Ile Thr Cys Arg Ala Ser

35 40 45

Gln Gly Ile Ser Ser Ala Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys

50 55 60

Ala Pro Lys Leu Leu Ile Tyr Asp Ala Ser Asn Leu Glu Ser Gly Val  
65 70 75 80

Pro Ser Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr  
85 90 95

Ile Ser Ser Leu Gln Pro Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln  
100 105 110

Phe Asn Ser Tyr Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
115 120 125

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu  
130 135 140

Gln Leu Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe  
145 150 155 160

Tyr Pro Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln  
165 170 175

Ser Gly Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser  
180 185 190

Thr Tyr Ser Leu Ser Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu  
195 200 205

Lys His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser  
210 215 220

Pro Val Thr Lys Ser Phe Asn Arg Gly Glu Cys

225

230

235